Major theme:
Cognition and representation

Title:
The world in motion.

Matching the difference between the speed at which technology can deliver information with the speed at which humans are capable to receive and react to this is one of the fundamental challenges to technology.
The advent of dynamic and contextual aspects of information has shown the conventional ways of delivering information lacking. This communicational shortcoming may have the consequence of producing a widening gap between human decision-making and technological filtering due to the limited communicational properties of the tools and methods in use.

The way we chose technology to present information digitally is predominantly encoded and sets narrow limits to the agility of which we may interact with information as the encoding doesn't facilitate our embodied perceptual mechanisms, but requires translation or de-coding. One may argue that by relying so heavily on encoding, we have achieved what Rodney Brooks calls the sense-think-act bottle-neck (Brooks 1991), although this is originally referring to a robot vs. real-world scenario, I here compare it to the human vs. virtual-world scenario, in the sense that we, in the digital situation, currently are put in an alien environment. However in contrast to the robot-population, humans have been thoroughly tested and fine-tuned by evolution, we just need to take advantage of this. If we want to interact dynamically we need the creation of digital situations where we may act with the speed of intuition, hence a reincorporation of the body as an interactive and contextual generator of information is necessary.
As digital technology has not yet commercially reached a level of sophistication where we can experience it as a prolongation of the body, we may still produce some of the real-world characteristics we have become attuned to. One of these being motion. We perceive the world by movement just as James Gibson demanded life-like experiments where the subject where able to move their heads, we should enable motion as a support to digital language. In the display of information motion holds a very usable feature in that it promotes interaction rather than the sense-think-act cycle, motion also has positive usability issues in terms of constancy (Robertson et al. 1991). Apart from having a potent aspect of attention motion also present a preattentive level of grouping which may add to the perception of complex structures (Ware et al. 2001). The potency of introducing motion

graphics as a communicational tool may hold the solution of how to present large amounts of data and especially relational aspects.
The relational property of motion graphics brings forward the need to understand the way we perceive of causality. Causality contains latent perceptual levels we have come to take for granted, without realizing the omniscience of this phenomenon.

In 1946 Professor Albert Michotte first reported a series of experiments on the perception of causality, he devised an elaborate mechanical apparatus that allowed him to manipulate the animation of two objects on the projection screen.
These animations could be as simple as moving a dot at various speeds and with various delays. However small variations in the display of movement would result in significant variations in the description of what his subjects described seeing.
The description could vary from the factual " the left ball moves 30 cm. To the right, then stopped for 3 seconds. Then the ball on the right moved about 10 cm. And stopped". At other times the description would contain words attributing motivation, emotion, gender, age and relationships between the two objects, for example, "The little ball wants to play with the big ball, but is chased away by the latter".
The impression of causality is dependent on specific and narrowly limited spatial-temporal features of the event observed.....the spatial-temporal organization is such that it directly unleashes this impression in us. Alter the relevant variables by a small but measurable amount and the impression disappears (Michotte 1964).

The use of animation has also been examined in an ecological context, perhaps most famous are Gunnar Johannsons point-light experiments, in which actors wearing small lights performed action in darkened rooms. The actions or situation were unrecognizable to subjects whenever the actors where not in motion. However in motion the groupings and relations among the lights made it possible for the subjects to perceive gender, weight, action performed and moods of the actors.

The possibility of creating a taxonomy of movement could present us with a pre-attentive non-encoding approach of visualizing information. For instance the paradoxical cases as Michotte named the situations in which an experimental event would cause an impression which real life bodies would not, is a field which is laid out to us to be explored in the context of communicational structures. In a superficial way motion shares some of the characteristics as the interactive process of 'internal bookkeeping' as put by Mark Bickhard (Bickhard and Richie 1983) in that it doesn't contain encoding, and yet is capable of signifying states.

Our bodies perceive the world, because they are of the world (Merlau-Ponty 1945)– the virtual world isn't separate but part of this world, just as much as our thoughts are present due to our physical existence. Due to the physical nature of 'virtual language' – we can to great advantage utilize the factors, which propose themselves to perception with minimal loss of energy, thus not undergoing translation or change in format.
The problem of handling the world in a nonverbal way may seem odd or disturbing to us, as we generally perceive of the virtual space as manmade. However the disadvantages of operating a format of non-human sized proportions are not only impractical it is also in the long run troublesome, if we are to relate to the creatures or phenomena which digital evolution will foster.
The visualization of dynamic information is therefore not only an endeavor of practical proportions – but a matter of future human existence.

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